

Record of Decision

Northwestern California

STANDARDS

for Rangeland Health

and

GUIDELINES

for Livestock Grazing Management

Prepared by the Bureau of Land Management
California State Office
June 1999

ABSTRACT

Northwestern California

Standards for Rangeland Health and Guidelines for Livestock Grazing Management

Draft ()

Final ()

Record of Decision (X)

United States Department of the Interior, Bureau of Land Management (BLM)

1. Type of Action: Administrative (X) Legislative ()


2. Abstract: This is the Record of Decision for the environmental impact statement (EIS) documenting the effects of adopting regional standards for rangeland health and guidelines for livestock grazing management on BLM-administered lands in parts of California and NW Nevada. This Record of Decision covers that part of Northwestern California formerly known as the Ukiah District.

The Preferred Alternative described in the final EIS (Alternative 5), has been chosen as the Standards and Guidelines for Northwestern California. The changes reflected in this Decision are within the scope and analysis of the EIS.

These Standards and Guidelines will be recommended to the Secretary of the Interior for final approval. They will take effect immediately upon that approval.

This document contains the actual Decision establishing Rangeland Health Standards and Guidelines for Northwestern California. It includes the following:

- Decision on Plan Amendments
- Standards and Guidelines for Northwestern California (formerly the Ukiah District)
- Implementation
- Monitoring


Al Wright, Acting State Director
Bureau of Land Management
California State Office

6-14-99
Date

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SUMMARY

This is the Record of Decision (Decision) recommending Rangeland Health Standards and Livestock Grazing Management Guidelines for Northwestern California. These recommendations will be submitted to the Secretary of the Interior (Secretary) for his approval, and will become effective immediately upon that approval.

The Decision amends BLM land use plans in Northwestern California to include the Standards and Guidelines and directs evaluation of existing, and development of new, Desired Plant Community (DPC) standards to ensure conformance of the DPCs with the Standards.

The Decision selects the Preferred Alternative described in the final EIS (Alternative 5), with minor changes for clarification, as the Rangeland Health Standards and Guidelines to be submitted to the Secretary for his approval.

The Decision describes how the Standards and Guidelines will be implemented and how rangeland health conditions will be assessed and monitored to assure achieving the Standards.

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DECISION

1. INTRODUCTION

There were five alternatives considered and analyzed in the EIS. Alternative 1 consisted of the standards and guidelines developed by the three Resource Advisory Councils (RACs) for their representative areas. Alternative 2 consisted of the state-wide standards developed by BLM, in consultation with representatives from each of the RACs, but without concurrence by the entire RAC membership. The guidelines for Alternative 2 were essentially the same as those for Alternative 1. Alternative 3 was adoption of the national "fall-back" standards and guidelines listed in the regulations. Alternative 4 was a rapid improvement or rapid recovery alternative developed by BLM, with suggestions from several interest groups. The Standards in Alternative 4 were the same as those in Alternative 2, except for Water Quality. Alternative 5 was a modified version of Alternative 1, with changes based upon suggestions and new information from the public, the RACs, and BLM.

The Decision is to select Alternative 5, with some minor changes and clarifications, all of which are within the scope of the analysis. This decision will become effective immediately upon approval by the Secretary of the Interior.

This Alternative was selected for a number of reasons, including (1) it meets the requirements of the regulations at 43 CFR 4180.1 and 4180.2 to address the principles of rangeland health; (2) it was based upon and incorporates a large portion of the regional standards and guidelines recommended by the Resource Advisory Council; (3) it incorporates some good suggestions by other agencies and the public; (4) it is based upon sound science as requested repeatedly by the different parties who commented on the process; and (5) it can be implemented within BLM's existing budgets without undue economic impacts to the grazing operators and the surrounding communities.

2. PLAN AMENDMENTS

In accordance with the grazing administration regulations at 43 CFR 4100, existing land use plans (Resource Management Plans, Management Framework Plans, and special plans such as PACFISH) have been examined to determine their compliance with the new regulations and the principles of rangeland health. In most cases, these plans do comply.

The land use plans identified below, as well as allotment management and other activity level plans, are hereby amended to include the standards and guidelines as adopted in this decision. The standards and guidelines will become effective immediately upon approval by the Secretary of the Interior and will be incorporated into the Plans at that time. Where there are plan decisions that are contrary to the new regulations, the principles of rangeland health, and the standards and guidelines, those decisions will be deleted from the plans or amended to comply.

Where "desired plant community" (DPC) objectives have been determined through the BLM planning and NEPA processes, the DPCs will be evaluated to ensure they meet the standards of rangeland health. Where DPCs have not yet been determined for a pasture or allotment, they will be developed through the BLM planning and NEPA processes to meet local and regional management objectives, and the standards of rangeland health.

Each Field Office will make the physical changes to their land use plans prior to the next grazing season. As this is merely plan maintenance, further NEPA analysis will not be necessary to complete this administrative action.

LAND USE PLAN	PLAN DATE	FIELD OFFICE
King Range Conservation Area Management Plan	1974	Arcata -- King Range only
Arcata Resource Management Plan	1992	Arcata -- exclusive of King Range
Redding Resource Management Plan	1993	Redding
Clear Lake Management Framework Plan	1984	Ukiah -- part

3. STANDARDS AND GUIDELINES for RANGELAND HEALTH in NORTHWESTERN CALIFORNIA

The Preferred Alternative described in the final EIS (Alternative 5), consisting of Standards and Guidelines for each of the areas covered by the three Resource Advisory Councils in California, with minor changes for clarification, has been chosen as the Standards and Guidelines for California. The changes reflected in this Decision are within the scope and analysis of the EIS. These Standards and Guidelines will take effect immediately upon their approval by the Secretary of the Interior.

These standards and guidelines were developed for, and are hereby adopted for, that part of northwestern and north-central California formerly known as the Ukiah District.

Preamble

The standards for rangeland health and guidelines for livestock grazing on BLM administered lands are written to accomplish the four fundamentals of rangeland health, insofar as they are affected by livestock grazing practices. These fundamentals are:

- A. Watersheds are properly functioning;
- B. Ecological processes are in order;
- C. Water quality complies with state standards; and,
- D. Habitats of protected species are in order.

Additionally, the standards and guidelines must be consistent with those of adopted regional conservation strategies which affect the Northwestern California public lands under the purview of the Ukiah Resource Advisory Council. The Northwest Forest Plan (NFP; USDI and USDA 1994) encompasses the entire range of the northern spotted owl and provides a set of land allocations and standards and guidelines for management activities. It contains both terrestrial and aquatic conservation strategies. Range management standards and guidelines are directed toward attainment of aquatic conservation strategy objectives through management of riparian reserves. The Interim Strategies for Managing Anadromous Fish-producing Streams on Federal Lands in Eastern Oregon and Washington, Idaho, and Portions of

California (PACFISH; USDI and USDA 1995) extends riparian standards and guidelines as in the NFP to all anadromous watersheds beyond the range of the northern spotted owl.

The RAC and BLM staff reviewed these standards and guidelines during development of the Standards for Rangeland Health and Guidelines for Livestock Grazing to ensure that the Aquatic Conservation Strategy objectives of the NFP and Riparian Management Objectives of PACFISH were consistent, and that the standards and guidelines were consistent with the BLM's Redding and Arcata Resource Management Plans.

A "standard" serves as the criterion to determine if management actions are resulting in the maintenance or attainment of healthy rangelands per the four fundamentals of rangeland health. Standards are expressions of physical and biological conditions or degree of function required for healthy sustainable rangelands. Guidelines serve as the vehicle to implement management actions related to livestock grazing to accomplish the rangeland health standards. Guidelines will indicate the types of grazing methods and practices determined to be appropriate to ensure that the standards can be met.

Standards and guidelines will apply to all BLM lands within the geographic area for which they are written. Using the standards and guidelines, the local BLM managers, in consultation, cooperation, and coordination with grazing permittees and other interested parties, will determine terms and conditions for each grazing allotment. These terms and conditions are the specific grazing practices that are appropriate for that allotment.

BLM lands vary so greatly in topography, climate, soils, water availability, size and distribution of parcels, and other factors that the local managers must have the flexibility needed to determine which grazing practices will work best in each area, and to change those practices when necessary to achieve the desired rangeland conditions.

Where historical grazing has been compatible with meeting the standards for soils, species, riparian areas or water quality, no permanent changes should be mandated in the existing grazing patterns without substantial scientific evidence that changing the grazing pattern will improve the ability to achieve the standards.

For any standard, guideline, term, or condition to work, it must be capable of being achieved, based on sound science or good common sense, and be measurable, understandable, and economically feasible. There is no use in setting standards that cannot be met.

NORTHWEST CALIFORNIA STANDARDS FOR HEALTHY RANGELANDS

STANDARD: SOILS

Soils exhibit characteristics of infiltration, fertility, permeability rates, and other functional biological and physical characteristics that are appropriate to soil type, climate, desired plant community, and land form.

Meaning That:

Precipitation is able to enter the soil surface at appropriate rates; the soil is adequately protected against accelerated erosion; and the soil fertility is maintained at appropriate levels.

As Indicated By:

- * Ground cover (vegetation and other types of ground cover such as rock) sufficient to protect sites from accelerated erosion.
- * Litter/residual dry matter evident, accumulating in place, and showing negligible movement by water.
- * A diversity of plant species, including native plants, with a variety of root depths, is present and plants are vigorous during the growing season (Rangeland Health, National Research Council, 1994, page 130, table 4-8).
- * There is minimal evidence of accelerated erosion in the form of rills, gullies, pedestaling of plants or rocks, flow patterns, physical soil crusts/surface sealing, or compaction layers below the soil surface.
- * Biological (microphytic or cryptogamic) soil crusts, if present, are intact.

STANDARD: SPECIES

Viable, healthy, productive, and diverse populations of native and desired plant and animal species, particularly special status species, are maintained and/or being restored.

Meaning That:

As Stated.

As Indicated By:

- * Wildlife habitats include seral stages, vegetation structure, and patch size to promote diverse and viable wildlife populations.
- * A variety of age classes is present for desired plant species (Rangeland Health, National Research Council 1994, page 130 table 4-8).
- * Plant vigor is adequate to maintain desirable plants and ensure reproduction and recruitment of plants when favorable climatic events occur.
- * The spatial distribution of plant and animal species and their habitats allows for reproduction and recovery from localized catastrophic events.
- * A diversity of plant species with various developmental stages and rooting depths is present to extend the photosynthetic period and increase energy capture.
- * There is evidence of beneficial natural disturbances.
- * Non-native, noxious, and invasive species are at acceptable levels.
- * Special status species and other local species of concern are healthy and in numbers that appear to ensure stable to increasing populations; habitat areas are large enough to support viable populations or are connected adequately with other similar habitat areas.

- * Adequate organic matter (litter and standing dead plant material) is present for site protection and decomposition to replenish soil nutrients and support nutrient cycling.
- * Where appropriate, biological soil crusts (also called microphytic or cryptogamic soil crusts) are present and not excessively fragmented.

STANDARD: RIPARIAN

Riparian/wetland vegetation, structure and diversity, and stream channels and floodplains are functioning properly, and meeting regional and local management objectives.

Meaning That:

The vegetation and soils interact to capture and pass sediment, sustain infiltration, maintain the water table, stabilize the channel, sustain high water quality, and promote biodiversity appropriate to soils, climate, and landform.

As Indicated By:

- * Naturally occurring vegetation cover will protect banks and dissipate energy during high flows.
- * Age-class and structure of woody/riparian vegetation are diverse and appropriate for the site. Recruitment of preferred species is adequate for sustaining the community.
- * Where appropriate, habitat is sufficient to provide for plant and animal riparian-dependent species. There is diversity and abundance of insects and amphibians.
- * Where appropriate, there is adequate woody debris.
- * A diversity of plant species with various developmental stages and rooting depths is present (Rangeland Health, National Research Council 1994, page 112, and table 4-8 on page 130). Root masses are sufficient to stabilize stream banks and shorelines.
- * Plant species present indicate that soil moisture characteristics are being maintained.
- * Shallow-rooted, invader plant species are not displacing native species.
- * Adequate organic matter (litter and standing dead plant material) is present to protect the site and to replenish soil nutrients through decomposition (Rangeland Health, National Research Council 1994, page 130, table 4-8).
- * Point bars are becoming vegetated over time.
- * There is adequate stream bank stability, morphology, pool frequency, stream width depth ratio, and minimal substrate sediments and bare ground.

Exceptions and exemptions from the riparian standard, where the standard may not be applicable:

Structural facilities constructed for livestock/wildlife water or other purposes which are not natural wetland and/or riparian areas will be excepted. Examples are: water troughs, stockponds, flood control structures, tailings ponds, water gaps on fenced or otherwise restricted stream corridors, etc.

STANDARD: WATER QUALITY

Surface and groundwater complies with objectives of the Clean Water Act and other applicable water quality requirements, including meeting the California State standards.

Management Objective: For water bodies, the primary objective is to maintain the existing quality and beneficial uses of water, protect them where they are threatened (and livestock grazing activities are a contributing factor) and restore them where they are currently degraded (and livestock grazing activities are a contributing factor). This objective is of even higher priority in the following situations:

- (a) where beneficial uses of water bodies have been listed as threatened or impaired pursuant to Section 303(d) of the Federal Clean Water Act;
- (b) where aquatic habitat is present or has been present for Federal threatened or endangered, candidate, and other special status species dependent on water resources; and,
- (c) in designated water resource sensitive areas such as riparian and wetland areas.

Meaning That:

BLM will, pursuant to the Clean Water Act:

Maintain the physical, biological, and chemical integrity of waters flowing across or underlying the lands it administers;

Protect the integrity of these waters where it is currently threatened;

Insofar as is feasible, restore the integrity of these waters where it is currently impaired;

Not contribute to pollution and take action to remedy any pollution resulting from its actions that violates applicable California water quality standards (including the requirements identified in Regional Basin Plans), or Tribal water quality standards, or other applicable water quality requirements (e.g., requirements adopted by SWRCB or RWQCB in California, or U.S. EPA pursuant to Section 303(d) of the Clean Water Act or the Coastal Zone Reauthorization Act). Where action related to grazing management is required, such action will be taken as soon as practicable but not later than the start of the next grazing year (in accordance with 43 CFR 4180.1).

Be consistent with the non-degradation policies identified in the Regional Basin Plans in California.

Work with the State (including the Regional Water Quality Control Boards) and U.S. EPA to establish appropriate beneficial uses for public waters, establish appropriate numeric targets for

303(d)-listed water bodies, and implement the applicable requirements to ensure that water quality on public lands meets the criteria for the designated beneficial uses of the water.

Develop and implement Best Management Practices (BMPs) approved by the SWRCB to protect and restore the quality and beneficial uses of water, and monitor both implementation and effectiveness of the BMPs. These BMPs will be developed in full consultation, coordination, and cooperation with permittees and other interests.

As Indicated By:

- * The following do not exceed the applicable requirements: chemical constituents, water temperature, nutrient loads, fecal coliform, turbidity, suspended sediment, and dissolved oxygen.
- * Achievement of the standards for riparian, wetlands, and water bodies.
- * Aquatic organisms and plants (e.g., macroinvertebrates, fish, algae and plants) indicate support for beneficial uses.
- * Monitoring results or other data that show water quality is meeting the standard.

NORTHWEST CALIFORNIA GUIDELINES FOR LIVESTOCK MANAGEMENT

RIPARIAN HABITATS

Guideline 1: Management for riparian-dependent special status species, where they occur, is primary.

Guideline 2: Season of use should be short term and allow for plant regrowth and reproduction. The residual or regrowth should provide sufficient herbaceous forage biomass to meet the requirements of plant vigor maintenance, plant and wildlife habitat, stream shading, bank protection and sediment entrapment. Specific grazing dates will be set in lease terms and conditions.

A 4-6 inch minimum stubble height will remain at the end of the growing season in most riparian areas.

There should be no more than 20% utilization on key riparian tree and shrub species in those areas where the presence of woody riparian species is necessary to meet standards.

Management changes will be implemented (e.g., reductions in stocking rate or another management change) if stubble heights on the average of the key riparian areas across the pasture (or allotment if there is only one pasture) fall below the guidelines for 2 consecutive years or in any 2 years out of every 5 years. In addition, at least 70% of riparian key areas on the allotment are to exceed minimum stubble heights in most years. If any particular key area fails to meet the guidelines for more than 2 consecutive years, then management action will be taken to remedy the problem in the area of the allotment that key area represents. Because stream banks may be inadequately protected by heavy use in any one year and because stubble heights below 3 inches result in cattle shifting their preference to shrubs, stubble heights below 2 inches in any one year will require a management change in the following year.

The mean stubble height on key riparian species will be estimated at each riparian key area and used to determine if the guidelines have been met. There are indications that the median may be a better statistic

to use than the mean; we will calculate both statistics from the same data sets and make a determination on which statistic to use after examining the data over a period of a few years. See Appendix 20 of the Final Environmental Impact Statement for further discussion on this issue.

For allotments not meeting or making significant progress toward meeting the standards (and for which higher stubble would be expected to help move these allotments toward the standards), stubble height data already in hand will be used to determine whether a management change is necessary. Thus, for example, if stubble heights on a particular key area have fallen below the thresholds for the two years previous to the approval of these standards and guidelines, a management change will be implemented prior to the first grazing year following this approval. In addition to implementing management changes that are expected to bring stubble heights within threshold values, close monitoring will follow to ensure that the grazing use levels are not exceeded during the grazing period following the management changes. If utilization levels are exceeded or expected to be exceeded during this period, a reduction or curtailment of further grazing in the area represented by the key area will be required for the remainder of the grazing season. In addition, further management changes will be implemented prior to the start of the next grazing season to bring utilization levels within thresholds.

Guideline 3: Degraded riparian areas may require complete rest or other change in management practices to initiate the recovery process.

Guideline 4: Locate salt blocks and supplemental feed well away from riparian zones.

Guideline 5: Locate all livestock handling and management facilities outside of riparian areas.

Guideline 6: Limit livestock trailing and watering to those areas and times that will not retard or prevent attainment of standards. Avoid trailing in vernal pools and wetlands whenever possible.

Guideline 7: Make temporary changes to livestock grazing management practices, including increases or decreases in stocking rates and seasons of use, in response to important episodic events (drought, flood, fire, good germination, etc.).

Guideline 8: Limit or exclude livestock grazing in identified culturally sensitive areas where grazing is detrimental to such sites.

Guideline 9: BLM will work with livestock grazing lessees to utilize prescribed fire, fencing, rest-rotation, holistic resource management, integrated pest management, and other innovative management practices where appropriate to protect riparian health.

Guideline 10: Native species are recommended for all revegetation and enhancement projects unless they are not available in sufficient quantities or are incapable of maintaining or achieving properly functioning conditions or biological health.

GUIDELINES FOR UPLAND RANGELANDS

TABLE A: Residual Dry Matter (RDM) Guidelines. Definition is pounds/acre by slope and precipitation.			
Precipitation	Slope 0-25%	Slope 26-45%	Slope 46% and Up
10" - 40"	400 lbs.	600 lbs.	800 lbs.
40" - 60"	750 lbs.	1,000 lbs.	1,250 lbs.
60+"	1,000 lbs.	1,500 lbs.	2,000 lbs.

Annual Upland Rangelands

Guideline 11: Grazing will be managed to achieve the RDM levels of Table A. If necessary to meet desired plant community (DPC) objectives, or if there is a probability to promote or enhance native perennial plant communities (including special status plants) to check degradation, then adjust grazing management practices, such as: season of use, RDM, stocking level, distribution, pasture rotation, or other range management practices.

Guideline 12: Continuous season-long grazing is allowed if it has been demonstrated that it can be consistent with achieving a healthy, properly functioning ecosystem.

Guideline 13: Alter livestock grazing or initiate erosion control practices in areas where soil is compacted or prone to accelerated erosion.

Guideline 14: BLM will work with livestock grazing lessees to utilize prescribed fire, fencing, rest-rotation, holistic resource management, integrated pest management, and other innovative management practices where appropriate.

Guideline 15: Make temporary changes to livestock grazing management practices, including increases or decreases in stocking rates and seasons of use in response to important episodic events (drought, flood, fire, good germination, etc.).

Guideline 16: Limit or exclude livestock grazing in identified culturally sensitive areas where grazing is detrimental to such sites.

Guideline 17: Degraded areas may require complete rest or other change in management practices to initiate the recovery process.

Guideline 18: The plan for grazing an any allotment must consider other uses (recreation, wildlife, mineral resource development, etc.) and be coordinated with other users of the public lands so that overall use does not detract from the goal of achieving rangeland health.

Guideline 19: Encourage grazing management practices that sustain biological diversity across the landscape by providing a mosaic of seral stages and vegetation corridors, and minimizing habitat fragmentation.

Guideline 20: Implement aggressive action to reduce the invasion of exotic plant species into native plant communities. Control the spread of noxious weeds through various methods such as grazing management, fire management, and other vegetative management practices.

Guideline 21: Utilize prescribed fire and natural prescribed fire to promote a broad vegetative diversity of healthy plant communities, while creating a mosaic network of interconnected vegetative resources.

Guideline 22: Native species are recommended for all revegetation and enhancement projects unless they are not available in sufficient quantities or are incapable of maintaining or achieving properly functioning conditions of biological health.

Perennial Rangeland Guidelines

Guideline 23: No authorized livestock grazing in new allotments which are native perennial grasslands until guidelines specific to these perennial species are developed and adopted.

Guideline 24: In existing allotments with perennial grass components, if monitoring or documented observation indicates that one of more of the standards is not being met, and if significant progress is not being made toward meeting all of those standards that are not being met, and if there is evidence that current grazing practices are causing or contributing to this unsatisfactory condition, then the following utilization levels will be applied. These utilization levels will be applied unless and until site-specific utilization levels are developed for specific allotments and documented in allotment management plans, other management plans, and/or in terms and conditions of grazing permits/leases. Site-specific utilization levels may be more restrictive than the guidelines presented below, consistent with achieving the desired resource conditions (as prescribed in land use plans and activity plans) and progress toward meeting these.

UTILIZATION GUIDELINES (adapted from Holechek 1988 and Holechek et al. 1998)	
Community Type	Percent of Use of Key Herbaceous Species
Salt desert shrubland	25-35
Semi-desert grass and shrubland	30-40
Sagebrush grassland	30-40
Perennial grass communities within the California annual grassland vegetation type	30-40
Coniferous forest	30-40
Mountain shrubland	30-40
Oak woodland	30-40
Pinyon-juniper woodland	30-40
Alpine tundra	20-30

Management changes will be implemented (e.g., reductions in stocking rate or another management change) if utilization guidelines on the average of the upland key areas across the pasture (or allotment if there is only one pasture) are exceeded for 2 consecutive years or in any 2 years out of every 5 years. In addition, at least 70% of upland key areas on the pasture (or allotment) are not to exceed maximum utilization guidelines in most years. Because of the potential long-term damage to perennial grass species associated with severe grazing, severe grazing use (>70% utilization) in any upland key area in any year will result in a management change the following year. If any particular key area fails to meet the guidelines for more than 2 consecutive years, then management action will be taken to remedy the problem in the area of the allotment that key area represents. The average (mean) utilization on key species will be estimated at each key area and used to determine if the guidelines have been met. There are indications that the median may be a better statistic to use than the mean; we will calculate both statistics from the same data sets and make a determination on which statistic to use after examining the data over a period of a few years. See Appendix 20 of the Final Environmental Impact Statement for further discussion on this issue.

For allotments not meeting or making significant progress toward meeting the standards (and for which lower utilization levels of perennial upland species would be expected to help move these allotments toward the standards), utilization data already in hand will be used to determine whether a management change is necessary. Thus, for example, if utilization on a particular key area has exceeded the thresholds in the above table for the two years previous to the approval of these standards and guidelines, a management change will be implemented prior to the first grazing year following this approval. In addition to implementing management changes that are expected to bring utilization levels within threshold values, close monitoring will follow to ensure that the grazing use levels are not exceeded during the grazing period following the management changes. If utilization levels are exceeded or expected to be exceeded during this period, a reduction or curtailment of further grazing in the area represented by the key area will be required for the remainder of the grazing season. In addition, further management changes will be implemented prior to the start of the next grazing season to bring utilization levels within thresholds.

General Guidelines

Guideline 25: There will be no more than 20 percent utilization of annual growth on key browse species prior to October 1 within identified deer concentration areas.

Guideline 26: Apply the management practices recognized and approved by the State of California as Best Management Practices (BMPs) for grazing related activities to protect and maintain water quality.

Guideline 27: In watersheds draining into water bodies that have been listed or are proposed for listing as having threatened or impaired beneficial uses, and where grazing activities may contribute to the pollutants causing such impairment, the management objective is to fully protect, enhance, and restore the beneficial uses of the water.

4. IMPLEMENTATION

BLM will fully implement the grazing standards and guidelines as directed in the rulemaking. The rule states that, “The authorized officer shall take appropriate action as soon as practicable but not later than the start of the next grazing year upon determining that grazing practices or levels of grazing use on public lands are significant factors in failing to achieve the standards and conform to the guidelines....”(43 CFR 4180.2(c)).

Determination of the “appropriate action,” and the actual scheduling of the implementation, will be the responsibility of the local Field Managers. However, it will be done using the priority system described in Appendix 1.

5. ASSESSMENTS and MONITORING

Field Offices will conduct assessments of all allotments according to the priority described in Appendix 1. All allotments will be assessed within five years of the approval of these Standards and Guidelines by the Secretary of the Interior. These assessments will be done using an interdisciplinary approach, and the findings and reasons for the findings will be documented. The format and content of this documentation will be left to the discretion of the individual Field Manager. (Examples are in the Final EIS.)

Field Offices will monitor allotments according to the priority described in Appendix 1. The monitoring will be done using an interdisciplinary approach, using methods described in Appendix 2.

Rangeland health conditions will be reported annually for each grazing allotment. This information will include the determinations of rangeland health conditions through assessments and monitoring and the progress made towards meeting rangeland health standards. Specifically, for each allotment an identification will be made of what standards, if any, are not met or where significant progress is not being made toward meeting the standard, etc.; what progress has been made regarding determining and implementing needed management changes; and the results of making the management changes as determined from monitoring information. Additionally, any changes in the management categories of the allotments will be identified and an explanation of the reasons for the change will be made.

The above information will be gathered at the Field Office which administers the respective allotment(s). A summary of this information will be consolidated for all of the allotments in the state (exclusive of the California Desert District) and made available to the public annually.

6. PUBLIC INVOLVEMENT and RESPONSE to PROTESTS

BLM has had extensive public involvement throughout the process of developing the Standards and Guidelines. Early phases of this involvement were described in the Draft EIS, and in Chapter 5 of the Final EIS. Further, we have consulted extensively with the three Resource Advisory Councils (RACs) on content and wording of the Standards and Guidelines.

As stated in the Final EIS, “following the comment period on the draft EIS, the RAC members were sent copies of all of the comment letters. The RACs discussed the comments and the draft EIS in their meetings. Representatives of the three RACs then met with BLM staff in a workshop setting and made recommendations for modification of their original proposals.”

Comments made by the public following the Draft EIS were individually analyzed by BLM, and responded to in the Final EIS. The Proposed Action (Alternative 5) in the Final EIS was based upon the original RAC proposals, with changes suggested by the RACs and by BLM, based upon analysis of the public comments. There were several meetings with the Susanville RAC and other interested parties prior to issuing the Final EIS because there were items in the Standards and Guidelines that caused concern to RAC members and ranchers in NE California and NW Nevada.

Following release of the Final EIS, BLM received 5 protests, two of which applied to Northwestern California. The major concerns were that there were changes made in the Final EIS that the public had not been allowed to review in the Draft; that a protestor did not like the water quality guidelines; that there was no “no grazing” alternative; and, that the Bureau does not have enough staff to implement the Standards and Guidelines.

As a result of these protests, BLM has added some language to this ROD to clarify how the standards and guidelines will be implemented. However, no substantive changes have been made to the Northwest California Standards and Guidelines from that contained in the Final EIS. Based on the clarification language, three of the protestors subsequently withdrew their protests. The remaining two protests were dismissed by the Director of BLM, who sent letters to the two protestors explaining the reasons for the dismissals.

APPENDIX 1: IMPLEMENTATION

The fallback standards (43 CFR 4180.2(f)(1)) have been in effect in since August 12, 1997. An initial screening of allotments was made, based on existing information, to determine the status of each allotment with respect to meeting the fallback standards. Each allotment was placed into one of four categories as follows:

- Category 1: Areas where one or more standards are not being met, or significant progress is not being made toward meeting the standards(s), and livestock grazing is a significant contributor to the problem.
- Category 2: Areas where all standards are being met, or significant progress is being made toward meeting the standard(s).
- Category 3: Areas where the status for one or more standards is not known, or the cause of the failure to not meet the standard(s) is not known.
- Category 4: Allotments where one or more of the standards are not being met or significant progress is not being made toward meeting the standards due to causes other than (or in addition to) livestock grazing activities. (Those allotments where current livestock grazing is also a cause for not meeting the standards are included in Category 1 in addition to this category.) The authorized officer should take appropriate action based on regulation or policy; however, these actions not related to livestock grazing are outside the scope of this implementation plan and will not be addressed in this document.

An assumption has been made by the BLM field managers that, with few possible exceptions, the implementation needed for the regulatory fallback standards and guidelines will essentially be the same as for any anticipated set of final approved standards and guidelines implemented pursuant to this Record of Decision (ROD). Consequently, the categorization of allotments under the standards in this ROD is likely to be the same as the categorization under the fallback standards and guidelines. Existing allotment assessments and their resulting determinations as to category will be reviewed to ensure the determination is correct under the standards set in place by this ROD.

New allotment assessments, reviews of existing allotment assessments, and determination of allotment category will be conducted in full consultation, coordination, and cooperation with permittees and other interests.

We intend to conduct assessments on all allotments within the next 5 years. First priority for these allotment assessments will be given to those allotments where we already know or suspect one or more of the standards is not being met. These include those allotments placed in Category 1 under the fallback standards and those allotments currently in Category 3 that we have reason to believe may not be meeting standards. After these allotments have been assessed, the remaining allotments will be assessed using the BLM I, M, and C priority management system, with first priority to I, second to M, and last to C.

For those allotments where the standards are not being met (Category 1), management actions will be implemented to correct the situation prior to the next grazing season turn-out period for the allotment. The management options will be determined in full coordination, consultation, and cooperation with permittees and other interests.

Monitoring will be conducted to evaluate the progress towards improving rangeland health and to evaluate the success of the specific management measures applied.

APPLICATION OF GUIDELINES

Once the guidelines are approved by the Secretary of the Interior, they will be applicable to the management of livestock grazing on all allotments not meeting the health standards. Some guidelines will be applicable regardless of the specific rangeland health condition, as they are designed to help protect and sustain rangeland health and are not intended to be applied only to remedy problems. Many of the guidelines will need to be more specifically identified and then applied as terms and conditions of a permit or lease, based upon the specific needs for meeting rangeland health standards. There will be instances where specific terms and conditions will be applied to grazing use authorizations for reasons other than those directly related to rangeland health, such as to accommodate other resource needs and land uses or to meet administrative requirements. Examples of this may include protecting cultural resource sites, requiring a specific breed of livestock to be used that is compatible with the needs of other permittees or lessees using the same allotment, or for meeting various regulatory requirements for grazing administration purposes. In some instances, existing terms and conditions will be carried over from previously made plans and commitments, such as those identified in allotment management plans or coordinated management plans. In these instances, the terms and conditions may or may not be related to rangeland health needs.

This Record of Decision contains utilization and stubble height guidelines (Guidelines 2 and 24) that apply to all allotments that do not meet the standards and are not making significant progress toward meeting the standards (and for which lower utilization levels or higher levels of stubble or residue would be expected to help move these allotments toward the standards). These guidelines will be implemented unless and until Field Offices develop site-specific utilization, residue, and stubble height guidelines. Until the standards are achieved or significant progress toward meeting the standards is being made, site-specific guidelines can be more but not less restrictive than those in these guidelines.

Guidelines 2 and 24 will be applied to those areas of the allotment responsible for the determination that the allotment is not meeting the standards. For example, an allotment has 10 riparian areas, of which 6 have been determined to be in proper functioning condition and 4 have been determined to be functional-at risk. The utilization guidelines for riparian species would be applied to the 4 riparian areas that are functional-at risk, not to the 6 that are in proper functioning condition (although all of the riparian areas will be managed to meet the standards). Also, only those guidelines that are applicable to making progress toward meeting the standards that are not being met would be applied. For example, if only riparian standards are not being met, then only the guidelines applicable to utilization and stubble height of riparian vegetation would be applied.

Although the implementation of utilization and stubble height levels is an important tool to restore and maintain rangeland health, it is only one of many tools that will be employed to meet the rangeland health standards. Other tools that will be implemented as appropriate include the other guidelines outlined in this document, changes in season of use, timing, duration, and/or intensity of grazing; rotational grazing; fencing; herding; and adjustments in stocking rate.

Any terms or conditions specified for a permit or lease must be consistent with and support appropriate BLM land use plans or other land use plans applicable to the public lands (such as the Northwest Forest Plan and PACFISH). BLM will also adhere to requirements such as those identified as terms or conditions from a biological opinion for protecting the habitat of a plant or animal under the Endangered Species Act.

Terms and conditions will be applied to grazing permits, leases, or other grazing authorizations as the authorized officer (Field Manager) determines the need. The determination of what terms and conditions will be applied will be made in consultation with the respective permittees/lessees and other interested parties involved in the particular allotment. The same process will be used for making needed changes to any existing terms and conditions. Information from assessments and evaluations of monitoring data will be used to determine the management changes needed. Management options that would be expected to move allotments toward meeting the standards will be determined in full coordination, consultation, and cooperation with permittees/lessees and other interested parties.

Alternative management changes will be considered and evaluated through the NEPA process prior to making final determinations. It is anticipated that in most instances, the terms and conditions will be identified cooperatively and be agreed upon by the affected permittee/lessee and all interested parties. Where an agreement cannot be reached, then a formal decision (which is appealable) will be issued.

If reductions in permitted use are necessary to achieve the standards or meet the guidelines, the animal unit months (AUMs) by which the permitted use is reduced will be held in suspension. Once the authorized officer determines that rangeland health has recovered to an extent that all or part of the suspended permitted use can be restored, this suspended permitted use shall first be apportioned in satisfaction of suspended permitted use to the permittee(s) or lessee(s) authorized to graze in the allotment in which the forage is available (this is in accordance with 43 CFR 4110.3-1(b)).

REPORTING PROGRESS IN RANGELAND HEALTH ACHIEVEMENTS

Rangeland health conditions will be reported annually for each grazing allotment. This information will include the determinations of rangeland health conditions through assessments and monitoring and the progress made towards meeting rangeland health standards. At a minimum the report will identify, by allotment: (1) what standards, if any, are not being met; (2) whether significant progress is being made toward meeting those standards that are not currently being met; (3) the magnitude of those standards not being met, in terms such as acres, miles of stream, number of sites, etc.; (4) the progress that has been made in determining and implementing needed management changes; and (5) the results of making the management changes as determined from monitoring and assessment information. Additionally, any changes in the management categories of the allotments will be identified, accompanied by an explanation of the reasons for the change.

The above information will be gathered at the field office which administers the respective allotment(s). A summary of this information will be consolidated for all of the allotments within the EIS area and made available to the public annually.

Tables were provided in the Final EIS that showed all allotments in the State and the category to which they were assigned in 1997. Since that list was compiled, management changes have been implemented and additional assessment and monitoring work has been completed that makes those lists obsolete. When the annual report is compiled each year, an updated list of all allotments, by category, will be provided as part of the report.

Throughout all processes the public is encouraged to participate in the identification of rangeland health conditions, developing management remedies, monitoring results, and reviewing progress towards achieving rangeland health standards.

APPENDIX 2: ASSESSMENTS AND MONITORING

Assessment to Determine if Allotments are Meeting Standards

“Assessment” means the analysis, synthesis, and interpretation of information, including monitoring data, to characterize the health of an allotment or other management unit. Gathering new information in the field may be necessary as part of the assessment process. “Monitoring” means the periodic gathering of information.

In some cases, quantitative monitoring data, gathered over a period of years, may be essential to determine whether an area meets the standards and whether livestock grazing is a significant factor contributing to a failure to meet the standards. However, quantitative monitoring data is not always required to make these determinations nor to implement actions to improve grazing management. The preamble to the 1995 grazing regulations (BLM 1995) states that managers may “use a variety of information, including monitoring records, assessments, and knowledge of the locale.” The 1995 regulations also require the manager to “reduce permitted grazing use or otherwise modify management practices...when monitoring or field observations show grazing use or patterns of use are not consistent with the provisions of 43 CFR subpart 4180” (43 CFR 4110.3-2(b); subpart 4180 includes the standards and guidelines). Changes in permitted use are to be “...supported by monitoring, field observation, ecological site inventory, or other data acceptable to the authorized officer.” Therefore, actions needed to improve grazing management in order to comply with guidelines or meet standards should not be delayed solely because monitoring data are lacking. Rangelands will not be allowed to deteriorate while prolonged monitoring studies are conducted, when reliable indicators of rangeland health demonstrate a need for corrective action.

Assessments should employ the minimum information needed to determine whether the standards are being met and whether livestock grazing is a significant factor in failing to meet the standards. All resource information or data collected should be tied directly to the standards, guidelines, or resource objectives.

Field Offices will conduct assessments of all allotments according to the priority described in Appendix 1. These assessments will be done using an interdisciplinary approach, and the findings and reasons for the findings will be documented. The format and content of this documentation will be left up to individual Field Managers, but the form used by the Eagle Lake Field Office (Appendix 24 in the Final EIS) is one example of the type of documentation that could be employed.

The term “assessment,” when used by itself, has the meaning described above; that is, it considers all available information, whether from inventory, monitoring, or qualitative assessments. “Qualitative assessment” refers to a particular method used to rapidly assess whether allotments or areas within allotments are meeting standards. The Proper Functioning Condition (PFC) procedure is the qualitative assessment method that is applied to riparian/wetland areas (BLM 1993b and 1994). The Qualitative Procedure to Assess Rangeland Health (Appendix 25 in the Final EIS), modified as necessary to apply to particular vegetation types, is the qualitative method that will be applied to upland rangelands. The use of these procedures, and their relationship to monitoring, will be discussed in more detail below.

Application of Traditional Rangeland Monitoring to Assessing Whether Standards are Being Met

Many rangeland monitoring studies have been in place and read on a regular basis by BLM personnel in California for many years. These studies involve using qualitative or quantitative procedures, or both, and often are directed at determining the condition and trend of key species in key areas. The basic types of studies, as well as the use of the key species and key area approach, are described in Chapter 3, Section 3.2.5, of the Final EIS. The purpose of these studies has primarily been to determine if management objectives relative to particular grazing allotments are being met or if the trend is toward meeting these objectives. For example, a management objective might be to increase the frequency of a key species such as squirreltail (*Elymus elymoides* ssp. *elymoides*) by 10% in Pasture A of Allotment Z in 5 years. Some method of frequency monitoring is then set up in one or more key areas in Pasture A and read on a regular basis (this could be annually but might be once every five years; in this example the frequency of monitoring would have to be at least every five years). In another example, the objective might be to increase the basal cover of the key species bluebunch wheatgrass (*Pseudoregneria spicata* ssp. *spicata*) in Pasture B of Allotment X by 5 percent over the next 6 years. A method of monitoring that measures cover is then set up in one or more key areas of Pasture B and read on a regular basis (this could be annually or on some other schedule, but must be at least every 6 years).

Management objectives have not always been directed at key species. Objectives to increase the total vegetation cover on particular pastures or allotments have also been applied, as well as objectives to decrease the cover of shrubs or trees. In both of these examples, monitoring methods are chosen that measure or estimate cover. These methods might be quantitative in nature or qualitative; the latter might involve taking photographs, either on the ground or aurally.

A second monitoring objective of traditional rangeland monitoring has been to determine the “condition and trend” of rangelands. The condition is determined by comparing the current species composition and production of a given ecological site to the species composition and production of the potential natural community of that site (see Chapter 3, Section 3.3.3, in the Final EIS for a more complete description of the process). Trend is recorded as upward, downward, or static, based on whether species composition and production are moving toward, away, or not at all, respectively, from the potential natural community. Ecological site inventory (ESI) is used to determine condition at any one point in time. A second ESI can then be used to determine trend; other monitoring studies, however, can also be used for this purpose, if they yield information on species composition.

Although much of the monitoring currently being conducted will have applicability to determining the effectiveness of implementation of the rangeland standards, some old methods will have to be modified and new methods introduced. This is because the standards require monitoring of certain rangeland attributes that are not assessed under current methodology.

Table 1 is a list of rangeland attributes that may be assessed in order to determine whether standards are being met.

Table 1. List of rangeland attributes that may be assessed in order to determine whether standards are being met, along with the actual wording of the indicator(s) to which each attribute applies (parentheses following each indicator show the standard to which it applies). Several indicators apply to more than one attribute and therefore are listed under each of the appropriate attributes.

7. Ground cover
 - a. "Point bars are becoming vegetated over time (Riparian)"
 - b. "Ground cover (vegetation and other types of ground cover such as rock) sufficient to protect sites from accelerated erosion" (Soils)
 - c. "Naturally occurring vegetation cover will protect banks and dissipate energy during high flows" (Riparian)
 - d. "Adequate stream bank stability, pool frequency, stream width depth ratio, and minimal substrate sediments and bare ground" (Riparian)
8. Litter/residual dry matter
 - a. "Adequate organic matter (litter and standing dead plant material) is present to protect the site and to replenish soil nutrients through decomposition" (Riparian)
 - b. "Litter/residual dry matter evident, accumulating in place, and showing negligible movement by water" (Soils)
 - c. "Adequate organic matter (litter and standing dead plant material) is present for site protection and decomposition to replenish soil nutrients and support nutrient cycling" (Species)
 - d. "Adequate organic matter (litter and standing dead material) is present to protect the site and to replenish soil nutrients through decomposition" (Riparian)
9. Plant species diversity
 - a. "Plant species present indicate that soil moisture characteristics are being maintained" (Riparian)
 - b. "A diversity of plant species, including native plants, with a variety of root depths, is present and plants are vigorous during the growing season" (Soils)
 - c. "A diversity of plant species with various developmental stages and rooting depths are present to extend the photosynthetic period and increase energy capture" (Species)
 - d. "Species composition contributes to the desired plant community objectives" (Species)
 - e. "A diversity of plant species with various developmental stages and rooting depths is present" (Riparian)
10. Plant vigor
 - a. "Plant vigor is adequate to maintain desirable plants and ensure reproduction and recruitment of plants when favorable climatic events occur" (Species)
 - b. "A diversity of plant species, including native plants, with a variety of root depths, is present and plants are vigorous during the growing season" (Soils)

Table 1, cont.

11. Soil crusts
 - a. “Where appropriate, biological soil crusts (also called microphytic or cryptogamic soil crusts) are present and not excessively fragmented” (Species)
 - b. “Biological (microphytic or cryptogamic) soil crusts, if present, are intact.” (Soils)
12. Plant structure
 - a. “A variety of age classes are present for desired plant species” (Species)
 - b. “Age-class and structure of woody/riparian vegetation is diverse and appropriate for the site. Recruitment of preferred species is adequate for sustaining the community” (Riparian)
 - c. “Wildlife habitats include seral stages, vegetation structure, and patch size to promote diverse and viable wildlife populations” (Species)
13. Spatial distribution of plants and animals and their habitats
 - a. “The spatial distribution of plant and animal species and their habitats allows for reproduction and recovery from localized catastrophic events” (Species)
 - b. “Wildlife habitats include seral stages, vegetation structure, and patch size to promote diverse and viable wildlife populations” (Species)
14. Natural disturbances

“There is evidence of beneficial natural disturbances” (Species)
15. Non-native plants and animals, including noxious and invasive species
 - a. “Non-native, noxious, and invasive species are at acceptable levels” (Species)
 - b. “Shallow-rooted, invader plant species are not displacing native species” (Riparian)
16. Special status species

“Special status species and other local species of concern are healthy and in numbers that appear to ensure stable to increasing populations; habitat areas are large enough to support viable populations or are connected adequately with other similar habitat areas” (Species)
17. Tree and shrub canopy cover
18. Woody debris

“Where appropriate, there is adequate woody debris” (Riparian)
19. Root masses

“Root masses are sufficient to stabilize stream banks and shorelines” (Riparian)
20. Streambank stability

“Adequate stream bank stability, pool frequency, stream width depth ratio, and minimal substrate sediments and bare ground” (Riparian)

Table 1, cont.

- | | |
|-----|--|
| 21. | Pool frequency
“Adequate stream bank stability, pool frequency, stream width depth ratio, and minimal substrate sediments and bare ground” (Riparian) |
| 22. | Substrate sediments
“Adequate stream bank stability, pool frequency, stream width depth ratio, and minimal substrate sediments and bare ground” (Riparian) |
| 23. | Stream width/depth
“Adequate stream bank stability, pool frequency, stream width depth ratio, and minimal substrate sediments and bare ground” (Riparian) |
| 24. | Chemical constituents of water
“The following do not exceed the applicable requirements: chemical constituents, water temperature, nutrient loads, fecal coliform, turbidity, suspended sediment, and dissolved oxygen” (Water Quality) |
| 25. | Water temperature
“The following do not exceed the applicable requirements: chemical constituents, water temperature, nutrient loads, fecal coliform, turbidity, suspended sediment, and dissolved oxygen” (Water Quality) |
| 26. | Nutrient loading
“The following do not exceed the applicable requirements: chemical constituents, water temperature, nutrient loads, fecal coliform, turbidity, suspended sediment, and dissolved oxygen” (Water Quality) |
| 27. | Fecal coliform
“The following do not exceed the applicable requirements: chemical constituents, water temperature, nutrient loads, fecal coliform, turbidity, suspended sediment, and dissolved oxygen” (Water Quality) |
| 28. | Turbidity
“The following do not exceed the applicable requirements: chemical constituents, water temperature, nutrient loads, fecal coliform, turbidity, suspended sediment, and dissolved oxygen” (Water Quality) |

Table 1, cont.

29.	Suspended sediment “The following do not exceed the applicable requirements: chemical constituents, water temperature, nutrient loads, fecal coliform, turbidity, suspended sediment, and dissolved oxygen” (Water Quality)
30.	Dissolved oxygen “The following do not exceed the applicable requirements: chemical constituents, water temperature, nutrient loads, fecal coliform, turbidity, suspended sediment, and dissolved oxygen” (Water Quality)
31.	Aquatic and riparian organisms a. “Aquatic organisms and plants (e.g., macroinvertebrates, fish, algae, and plants) indicate support for beneficial uses” (Water Quality) b. “Where appropriate, habitat is sufficient to provide for plant and animal riparian dependent species. There is diversity and abundance of insects and amphibians.” (Riparian)
32.	Soil erosion “There is minimal evidence of accelerated erosion in the form of rills, gullies, pedestaling of plants or rocks, flow patterns, physical soil crusts/surface sealing, or compaction layers below the soil surface” (Soils)

Monitoring of Vegetation and Physical Attributes

Vegetation monitoring (including soil crusts). Table A.22.2 in the Final EIS lists the trend monitoring methods currently in use or described in the Interagency Technical Reference, Sampling Vegetation Attributes (BLM et al. 1996a) and the plant and vegetation attributes they measure. Of the attributes listed in Table 1 in this appendix, the following can be monitored using a combination of the methods from the technical reference:

- Ground cover
- Litter/residual dry matter
- Plant species diversity
- Plant vigor
- Soil crusts
- Plant structure
- Spatial distribution of plants and their habitats
- Natural disturbances (although not specifically identified by a column heading on Table A.22.2, these can be tracked under the heading “spatial distribution”)
- Non-native plants (these can be monitored by measuring or estimating density, frequency, or cover)

- Special status plants (these can be monitored by measuring or estimating density, frequency, or cover)
- Tree and shrub canopy cover

Note, however, that in some cases these attributes are not measured or estimated as part of the standard procedure. For example, the typical way in which the Daubenmire method (which estimates canopy cover in either 6 or 10 categories in a series of plots) is used yields measurements of the cover of bare ground, vegetation, litter, gravel/rock, as well as frequency and species composition. Other attributes, such as the cover of biological, physical, and chemical crusts, cryptogams, production, and vigor *can* be incorporated into the standard procedure with proper planning.

Monitoring of Guidelines Associated with Utilization, Residue, and Stubble Heights. For the reasons given in Section 3.2.5 in the Final EIS, it is important to set and monitor guidelines on utilization levels, minimum residues, and minimum stubble heights. Guidelines have been set for the entire EIS area where standards are not being met; site-specific guidelines may be set by Field Offices. Existing monitoring of utilization, residue, and stubble heights will continue, and new studies will be established as needed. On upland perennial rangelands not meeting the standards, utilization will be measured on key species in key areas, with the average (mean) utilization used to assess whether the portion of the allotment or pasture represented by the key area is meeting the utilization guideline (there are indications that the median may be a better statistic to use than the mean; we will calculate both statistics from the same data sets and make this determination after examining the data over a period of a few years). We recognize that residue, in terms of stubble height and litter, is a better measure of utilization in upland perennial grass communities than percent utilization, but we do not have sufficient information at this time to develop guidelines that use these attributes. We intend to investigate this matter further, however, as time and funding permit, and to eventually replace the utilization guidelines on perennial uplands (which specify percent of key species removed) with guidelines specifying minimum amounts of residue to be left. A very preliminary study proposal is given in Table 2.

Table 2. Preliminary Study Proposal: Developing Residue and Stubble Height Guidelines for Major Vegetation Types in the Great Basin

Objective:	Develop upland residue and stubble height guidelines for the major vegetation types in the Great Basin
•	Conduct a literature review.
	This review would look at material published in peer-reviewed publications and “gray” literature as well as information collected by field offices. In addition, range scientists at universities and in other agencies (e.g., NRCS, ARS, Forest Service) would be interviewed.
•	Conduct the following study.
	A study would be conducted to fill in the gaps in information that are expected to exist following the literature review. Over a period of several years the residue left following known levels of utilization will be measured at several sites in different vegetation types. This will entail measuring total above ground production in ungrazed areas (using either cages or exclosures), measuring utilization after the grazing season on key species, and measuring the amount of standing and fallen dead plant material (separately) at that level of use. The stubble heights of key species will also be measured, both in grazed and ungrazed condition. Photographs will be taken both of the key species and the landscape, both in grazed and ungrazed areas. As much as possible, sites should be selected that are close to existing weather stations (NOAA, RAWS stations, etc.) so the total production can be related to the amount of precipitation received.
	The study should be conducted over several years in order to show a range of residue, stubble heights, and utilization levels as related to different amounts of precipitation. This study should enable field personnel to develop either State or regional guidelines on the appropriate residue and stubble height levels that should be left following grazing.

Following is a list of the utilization and residue studies from the Interagency Technical Reference, *Utilization Studies and Residual Measurements* (BLM et al. 1996b) that may be applied to public lands within the EIS area:

Browse Utilization Methods:

- Twig Length Measurement Method
- Cole Browse Method
- Extensive Browse Method

Residue Measuring Methods

- Stubble Height Method
- Visual Obstruction Method
- Comparative Yield Method

Herbaceous Utilization Methods

- Paired Plot Method
- Ocular Estimate

- Key Species Method
- Height-Weight Method
- Actual Weight Method
- Grazed-Class Method
- Landscape Appearance Method

Exact methods to be used to monitor utilization, residue, and stubble heights will be determined by the Field Offices.

The above utilization and residue monitoring studies are usually applied to key areas (see the glossary in the Final EIS for a definition of key area and the discussion of key areas in Chapter 3, Section 3.2.5 of the Final EIS). Utilization pattern mapping is another important monitoring tool. This method entails canvassing the entire allotment or individual pasture and mapping the area into several classes based on the level of utilization (e.g., no use, light use, moderate use, and heavy use) on key species (see Chapter 3, Section 3.2.5 for more information). These studies will continue where necessary.

Actual use monitoring. Actual use studies (BLM 1984) are another form of traditional range monitoring that will continue. These studies track the actual use made by livestock in pastures and/or allotments based on the numbers of livestock and the length of time livestock are present. These numbers are usually provided by lessees/permittees but are sometimes also estimated from counts by BLM professionals. The actual use made by other herbivores such as wild horses and burros and wildlife is often estimated as well. These data are important in determining what changes should be made when objectives and standards are not being met.

Climate monitoring. It is important to consider climate when interpreting monitoring data. Climate monitoring most often consists of compiling precipitation and temperature information collected by the National Oceanic and Atmospheric Administration at the many weather stations in the EIS area. In some cases, precipitation data are collected through the placement of rain gauges in allotments. Additionally, both temperature and precipitation data are collected from 14 Remote Automated Weather Stations (RAWS) within the EIS area.

Riparian-wetland monitoring. The vegetation attributes of riparian-wetland areas are monitored using one or more of the techniques described in Table A.22.2 in the Final EIS. The Greenline Riparian-Wetland Monitoring Method (BLM 1993a) is also used by some field offices. The following physical attributes are also monitored on some riparian-wetland areas:

- Bankfull discharge
- Sinuosity
- Riparian zone width
- Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody debris)
- Width/depth ratio

Use of Qualitative Assessments to Determine if Standards are Being Met

As noted above, traditional range monitoring studies can help assess whether standards are being met. The standards, however, call for the assessment of some indicators that are not addressed by these traditional monitoring studies. Where the status of these indicators cannot be inferred from existing monitoring information, other monitoring or assessment methods must be employed. The following

qualitative assessment procedures were developed to rapidly assess all the physical and biological components of rangeland health.

Qualitative Upland Assessment. For uplands, the qualitative assessment method will be used. Although a technical reference has not yet been finalized on the method, a draft has been prepared and field tested. The details were given in Appendix 25 in the Final EIS. Field Offices may adapt this method as necessary to meet local needs. The results of the qualitative assessment will be used in conjunction with all other available information to determine if an allotment is meeting the standards. If it is not, and does not appear to be making significant progress toward meeting the standards, and grazing has been determined to be a significant factor, changes will be made to the management of livestock grazing. To assess whether these management changes are effective in moving toward meeting the standards, monitoring will be initiated (or, if already being conducted, will be continued) that is directed toward those indicators that caused the allotment to not meet the standards. For example, if the qualitative assessment indicates that insufficient litter is present, subsequent monitoring will focus on measuring the amount of litter (either the cover of litter or the amount in weight of litter).

Qualitative Riparian/Wetland Assessment. A qualitative procedure, called proper functioning condition (PFC) assessment (see Appendix 23 of the Final EIS), is already in place to help assess whether riparian and wetland areas are meeting the standards (BLM 1993b and 1994). This PFC assessment has already been applied to many riparian/wetland areas within the EIS area. Its use will be continued. Just as with the upland qualitative assessment procedure, when the PFC results in one or more indicators being responsible for an allotment not meeting the standards, subsequent monitoring will focus on those indicators. For example, if the width/depth ratio is the main reason a stream is determined to be not meeting the standard of proper functioning condition, subsequent monitoring would focus on the width/depth ratio of the stream.

Wildlife Monitoring for Rangeland Health

The standards for rangeland health include a "species" standard. They also include several indicators of animal habitats and populations that are attributes of a healthy rangeland ecosystem. These indicators can be divided into those related to habitat and those related to animal populations. The habitat indicators include habitat seral stages, vegetation structure and patch size, spatial distribution of habitats, habitat size, how habitats are connected, and the habitat's ability to support viable populations. The animal population indicators include the spatial distribution of animals, special status species numbers, stable to increasing populations, viable populations, and levels of non-native animals.

The BLM recognizes that determining the biodiversity health for each allotment is an impossible task involving the gathering of species-specific data at many locations and scales. However, a more achievable option is to design monitoring programs that evaluate ecosystem components, structures and processes as indicators of a habitat's *capability* to support healthy animal communities. We would then rely on focused studies to more directly monitor species of management concern.

There are different scales of monitoring and management to evaluate the relationships between habitat management from livestock grazing and animal populations. It is critical to evaluate the assumptions that habitat management at the allotment (or pasture) level will actually affect animal presence and abundance at the monitoring site(s). It is necessary to determine the appropriate scale of monitoring: coarse scale regional monitoring of several allotments for some animal community indicators; fine scale monitoring at the allotment level for some special status, game animals, and keystone species; and site-specific scale for some special status species and ecosystem health indicators that are restricted to very small habitat areas. Monitoring plans should consider these issues of scale when designing allotment monitoring programs.

Habitat mapping and vegetation monitoring would usually suffice to evaluate whether the allotments are providing *adequate opportunities* for wildlife communities in meeting the standards. Spot checking for selected species at the appropriate habitats over several allotments would evaluate rangeland health for many species. At a finer scale of analysis, population censuses at the allotment scale may be needed to determine if the standards are being met. This finer scale monitoring would be directed at special status animals or at species with a very restricted habitat requirement as a rangeland health indicator.

Most allotment monitoring will evaluate the habitat capability for species of management concern. Vegetation characteristics of habitat structure (for example, ground cover, vertical layering, form of trees and shrubs), plant composition, age structure of plants (young, reproducing, old, or decadent trees or shrubs), plant vigor, and the distribution of plant communities across the landscape will be the focus of BLM's monitoring.

Field assessments should emphasize the use of habitat quality checklists to identify significant problems at the appropriate scale (allotment or landscape levels). These checklists can be designed to evaluate habitat quality for a particular species, group of species, or general animal community composition. The elements of such a checklist are given in Table 3. More focused studies or monitoring protocols may be developed where habitat monitoring indicates standards are not being met and where management priority is high.

The BLM will consider existing information on soils, habitats, scientific literature, historic records, fire history, and disturbance regimes to assess habitat capability. When more detailed information regarding a particular species is required, wildlife information systems and species records may be used to conduct assessments of habitat quality for animals of management concern. The California Wildlife Habitat Relationships System (CWHR) and Habitat Evaluation Procedures (HEP) models may be used for these assessments. These models are based on the assumptions that through habitat assessments, habitat capability (quality) for a particular species or group of species can be determined. The California Natural Diversity Data Base will be used to help assess the significance of BLM actions on special status animal species and rare plant communities.

The rangeland health indicators for animal (wildlife) populations cannot be assessed separately for each species. Evaluating animal numbers and distributions for each species would require an extensive amount of monitoring of hundreds of animal species, a task far beyond the capability of the BLM and our State and private management partners. Instead, monitoring must be focused on a subset of animal "indicator" species that represent wildlife community and populations in general as indicators of ecosystem health. While this method of monitoring has been criticized as flawed since each species has its own niche in the ecosystem that cannot be represented by another species, this approach gives the BLM the opportunity to focus wildlife monitoring within our capability. The indicator species may be threatened or endangered species, game animals, species of regional or special concern, keystone species, abundant species, or rare species. The selection of the indicator species will depend on the allotment management objectives, land use plan objectives, and/or BLM commitments to regional plans. The monitoring of the indicator species may include general distribution or abundance surveys or more focused research to better evaluate the relationships between the animals and their habitats and grazing effects. In many cases, data collection may not be required within each allotment, but across the landscape in habitats with similar characteristics.

Table 3. Elements of a Biodiversity and Species Checklist for Wildlife.

Habitats

CWHR Habitats and seral stage(es) present:

Habitat composition and seral stages related to management objectives:

- Seral stages meet management objectives
- Plant community composition indicates good rangeland health
- Native species present at acceptable levels
- Non-native species at acceptable levels
- Invasive weeds at acceptable levels

Habitat structure related to management objectives:

- Plant cover is adequate, within natural range
- Plant height adequate: herbaceous shrub trees
- Plant density is adequate
- Plants distributed normally
- Ground cover is within normal range
- Age-class indicates community maintenance
- Form-class indicates normal growth characteristics

Distribution of Habitats across landscape:

- Patch size is adequate
- Fragmentation is not excessive
- Habitats are connected within site capability

Species

Management indicators selected:

Habitats meet requirements of indicator species:

- Elements are considered acceptable:
- Elements lacking:

Key management areas present:

- Listed species habitats
- Riparian
- Wetlands
- Seasonal ranges (winter, migratory, calving/fawning, etc.)
- Breeding/nesting sites

Table 3, cont.

Focused Studies

Focused studies in progress:

Focused studies needed:

Evaluation:

Habitats are meeting management objectives

Habitats promote diverse and viable wildlife populations

Seral stages present Composition

Structure Distribution

Habitats can withstand catastrophic events (flood/fire/windstorm)

Species present indicate healthy ecosystem function

Habitats meeting species/diversity standards

Habitats not meeting species/diversity standards

Livestock grazing/management is (is not) significant factor

Management changes needed to meet standards

Water Quality Assessment and Monitoring

Most often, when riparian areas and wetlands are healthy, the quality of water for most beneficial uses meets standards. Many of the attributes assessed and monitored for riparian and wetland areas also affect the quality of the water, at least indirectly. There are exceptions, however, where this may not always be true, particularly with regard to the chemistry and physical properties of the water. Biological assessments and monitoring of aquatic organisms in water bodies serve to identify important attributes reflecting the quality of water for many beneficial uses and will be used when it is determined that the quality of the water may be in question.

In most situations BLM will depend upon the State and Regional water quality agencies to either identify, or assist BLM in identifying, where water quality is impaired or has a high probability of being impaired. For those areas where livestock grazing activities on public land are known to cause or are suspected of causing water quality impairment, BLM will closely coordinate with these agencies in obtaining any needed water quality monitoring and assessment information. Where sufficient information is not available, BLM will also closely coordinate with these agencies in the selection and design of the attributes to be assessed and monitored by BLM. Since the states have primary responsibility and primacy regarding the Clean Water Act and the Safe Drinking Water Act, it is important that any water quality assessment or monitoring information obtained by BLM meet the acceptance of those state agencies responsible for identifying the specific requirements of those Acts.

Effectiveness Monitoring of Guidelines

Effectiveness monitoring is used to evaluate whether a particular activity, when carried out as planned, results in the desired effect (MacDonald et al. 1991). In the context of rangeland standards and guidelines, effectiveness monitoring will be used to evaluate whether guidelines, if followed, result in either meeting or making progress toward meeting the standards. This type of monitoring will be employed when the other types of monitoring and assessment discussed in this appendix determine that progress is not being made toward meeting standards despite compliance with guidelines. For example, a grazing system is implemented in order to move an allotment toward meeting standards, but after five years of monitoring no progress is detected. The management system will then be evaluated to determine why it is not producing the desired effects and changed accordingly. Utilization and stubble height guidelines provide another example. If, after several years of compliance with these guidelines, allotments are not moving toward meeting standards, these guidelines will be evaluated and supplanted by new ones as appropriate.

Application of New Technology to Monitor and Assess Rangeland Health

Traditional transect-based techniques for measuring vegetation and other indicators of rangeland health provide detailed information at a plot level. Care must be used when using plot-based measurements to characterize large areas because of problems in extrapolating information from small samples to large areas. Methods for assessing rangeland health at multiple scales are currently in their infancy. The use of remotely-sensed data, primarily satellite imagery, will hopefully become a rapid and inexpensive method for measuring rangeland health on larger areas.

One pilot effort recently initiated in the northeastern portion of the EIS area is a cooperative project between BLM, the National Resource Conservation Service, and the Forest Service's Pacific Northwest Experiment Station. It involves the transitioning from traditional Soil Surveys to Resource Surveys, which are multi-resource, map-based surveys of soil, vegetation, water, and wildlife characteristics. Part of the project will include development of a set of tools that will be designed to assess rangeland health at multiple scales and areal extent.

As new methodologies such as this one are developed, they will be applied to monitoring and assessing rangeland health standards within the EIS area.

Monitoring and Assessment Plans

Each Field Office will develop a plan that will direct its monitoring and assessment activities relative to making determinations on whether standards are being met, whether progress is being made toward meeting the standards if they are not currently being met, and whether livestock grazing is the reason for standards not being met. These plans need not be elaborate, but at a minimum they will include a list of the attributes that will be monitored, the monitoring methods that will be used (with reference to a complete description of the method), the allotments that will be monitored using these methods, the frequency at which the allotments will be monitored, and how often interdisciplinary assessments will be made of all the information collected (including monitoring data, qualitative assessment information, inventory data, etc.). A monitoring and assessment schedule will also be included. These monitoring and assessment plans will be made available to all interested parties.

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